

Claims

1. An electronic circuit comprising a plurality of unit circuits,

each of the plurality of unit circuits comprising:

a first transistor including a first terminal, a second terminal, and a first control terminal;

a second transistor including a third terminal and a fourth terminal, the third terminal being connected to the first terminal;

an electronic element including a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal; and

a third transistor for controlling electrical connection between the first terminal and the first control terminal,

the sixth terminal being set to a plurality of electric potentials or be electrically connected to a predetermined electric potential and electrically disconnected from the predetermined electric potential.

2. An electronic circuit comprising a plurality of unit circuits,

each of the plurality of unit circuits comprising:

a first transistor including a first terminal, a second terminal, and a first control terminal;

a second transistor including a third terminal and a fourth terminal, the third terminal being connected to the first terminal;

an electronic element including a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal, the sixth terminal being connected to an electric potential control line;

a third transistor for controlling electrical connection between the first terminal and the first control terminal; and

a control circuit, the control circuit setting the electric potential control line to a plurality of electric potentials, or the control circuit controlling electrical connection and electrical disconnection between the electric potential control line and a predetermined electric potential.

3. The electronic circuit according to Claim 1,

transistors included in each of the unit circuits being only the first transistor, the second transistor, and the third transistor.

4. The electronic circuit according to Claim 1,

a capacitive element being connected to the first control terminal.

5. The electronic circuit according to Claim 2,

the control circuit being a fourth transistor including

a ninth terminal and a tenth terminal,

the ninth terminal being connected to the sixth terminal through the electric potential control line, and

the tenth terminal being connected to a supply line for supplying the plurality of electric potentials or the predetermined electric potential.

6. The electronic circuit according to one of Claims 1, the electronic element being a current-driven element.

7. An electronic circuit, comprising:

an electronic element;

a first transistor including a first terminal, a second terminal, and a control terminal and controlling a current level supplied to the electronic element in accordance with an electric conduction state of the first transistor, the first terminal being connected to one end of the electronic element;

a second transistor connected to the first transistor; and

a control circuit connected to the other end of the electronic element, the control circuit controlling current not to flow through the electronic element in a period where current flows through a first current path including the first transistor and the second transistor and for controlling current to flow through a second current path including the first transistor and the electronic element in

a state where the second transistor is in an off state.

8. The electronic circuit according to Claim 7,

further comprising a capacitive element, the capacitive element being connected to the control terminal and holding a quantity of charge corresponding to a current level of the current flowing through the first current path.

9. A method of driving an electronic circuit,

the electronic circuit comprising:

an electronic element;

a first transistor including a first terminal, a second terminal, and a control terminal, the first terminal being connected to one end of the electronic element;

a capacitive element connected to the control terminal;
and

a second transistor connected to the first terminal,

the method comprising the steps of:

setting the electric potential of the other end of the electronic element to an electric potential preventing current from flowing through the electronic element, supplying current to a first current path including at least the first transistor and the second transistor, and accumulating a quantity of charge corresponding to a current level of the current passing through the first current path in the capacitive element; and

setting the electric potential of the other end of the

electronic element to an electric potential letting current flow through the electronic element and supplying a current with a current level corresponding to the quantity of charge to the electronic element.

10. An electronic device including a plurality of first signal lines, a plurality of second lines, and a plurality of unit circuits,

each of the plurality of unit circuits comprising:

an electronic element including a first electrode and a second electrode and driven in accordance with a current level of current flowing between the first electrode and the second electrode;

a first transistor connected to the first electrode and controlling the current level in accordance with an electric conduction state of the first transistor;

a second transistor connected to the first transistor and electrically connecting one of the plurality of second signal lines to the first transistor by switching to an on state in accordance with a control signal supplied from one of the plurality of first signal lines; and

a capacitive element for holding a quantity of charge corresponding to current signals supplied from the first signal line and determining an electric conduction state of the first transistor,

the electric potential of the second electrode being

set such that current does not flow through the electronic element, or the second electrode being electrically disconnected from a power source potential in a period where at least the second transistor is in an on state.

11. An electro-optical device including a plurality of scanning lines, a plurality of data lines, a plurality of unit circuits, and a plurality of power source lines,

each of the plurality of unit circuits comprising:

a first transistor including a first terminal, a second terminal, and a first control terminal, the second terminal being connected to one of the plurality of power source lines;

a second transistor including a third terminal, a fourth terminal, and a second control terminal, the third terminal being connected to the first terminal, the fourth terminal being connected to one of the plurality of data lines, and the second control terminal being connected to one of the plurality of scanning lines;

an electro-optical element including a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal;

a capacitive element including a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal;

a third transistor for controlling electrical

connection between the first terminal and the first control terminal;

an electric potential control line connected to the sixth terminal together with the sixth terminals of the other unit circuits of the plurality of unit circuits; and

a control circuit for setting the electric potential control line to a plurality of electric potentials or for controlling electrical connection and electrical disconnection between the electric potential control line and a predetermined electric potential.

12. The electro-optical device according to Claim 11, only the first transistor, the second transistor, and the third transistor being transistors included in each of the unit circuits.

13. The electro-optical device according to Claim 11, the control circuit being a fourth transistor including a ninth terminal and a tenth terminal, and

the ninth terminal being connected to the sixth terminal through the electric potential control line, and

the tenth terminal being connected to a supply line for supplying the plurality of electric potentials or the predetermined electric potential.

14. The electro-optical device according to Claim 11,

the electro-optical element being an EL element in which a light-emitting layer is made of an organic material.

15. The electro-optical device according to Claim 11,
electro-optical elements of the same color being
arranged along one of the plurality of scanning lines.

16. A method of driving an electro-optical device including
a plurality of data lines, a plurality of scanning lines,
and a plurality of unit circuits,

each of the plurality of unit circuits comprising:

an electro-optical element exhibiting an optical effect
in accordance with an electric potential difference between
a first electrode and a second electrode;

a first transistor including a first terminal, a second
terminal, and a first control terminal, the first terminal
being connected to the first electrode;

a capacitive element connected to the first control
terminal; and

a second transistor including a third terminal, a
fourth terminal, and a second control terminal, the third
terminal being connected to the first terminal, the fourth
terminal being connected to a corresponding data line of the
plurality of data lines, and the second control terminal
being connected to a corresponding scanning line of the
plurality of scanning lines,

the method comprising:

a first step of setting an electric potential of the
second electrode such that the electro-optical element does

not exhibit the optical effect and switching the second transistor to an on state by supplying scanning signals to the second control terminal through the corresponding scanning line of the plurality of scanning lines, supplying data signals as current from the corresponding data line to the first transistor through the second transistor, and accumulating a quantity of charge corresponding to the data signals in the capacitive element; and

a second step of switching the second transistor to an off state by supplying scanning signals to the second control terminal through the corresponding scanning line and further setting an electric potential of the second electrode such that the electro-optical element exhibits the optical effect, and supplying a voltage of the voltage level or a current of the current level in accordance with an electric conduction state of the first transistor set in accordance with the quantity of charge accumulated in the capacitive element to the electro-optical element through the first electrode.

17. The method according to Claim 16,

each of the plurality of unit circuits further comprising a third transistor for controlling electrical connection and electrical disconnection between the first terminal and the first control terminal,

the first terminal being electrically connected to the

first control terminal by switching the third transistor to an on state at least in a part of the period where the first step is performed, and

the first terminal being electrically disconnected from the first control terminal by switching the third transistor to an off state at least in a part of the period where the second step is performed.

18. The method according to Claim 16,

the electro-optical element being an organic EL element.

19. An electronic apparatus equipped with the electronic circuit according to Claim 1.

20. An electronic apparatus equipped with the electro-optical device according to Claim 11.